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SPECIFICATION FOR SPUN HEMP YARN

(*First Revision*)

UDC 677·12·072

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

Gr 2

May 1987

Indian Standard

SPECIFICATION FOR SPUN HEMP YARN

(First Revision)

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Indian Standard

SPECIFICATION FOR SPUN HEMP YARN

(First Revision)

0. FOREWORD

0.1 This Indian Standard (First Revision) was adopted by the Indian Standards Institution on 8 January 1987, after the draft finalized by the Cordage Sectional Committee had been approved by the Textile Division Council.

0.2 The present revision of the standard has been made in the light of the experience gained since its publication in 1972. The following major changes have been made in the present revision.

a) The requirement for rot-proofing has been modified, and

b) New sampling clause has been added.

Opportunity has also been availed to modify certain other clauses for bringing this specification in line with other up-dated cordage specifications.

0.3 This standard is based on IND/TC 2452 'Spun yarn, hemp, white or tarred,' issued by the Ministry of Defence, Government of India.

0.4 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard prescribes the requirements of 5 varieties of spun hemp yarn, tarred or untarred.

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*Rules for rounding off numerical values (*revised*).

2. MANUFACTURE

2.1 Hemp Fibre — The fibre used in the manufacture of yarn should be hemp (*cannabis sativa* or *crotolaria juncea*), unadulterated and free from defects and shorts. It should be well-hackled.

2.2 Yarn — The hemp yarn should be evenly spun. The direction of twist in the single yarn shall be 'Z' and that in the plied yarn shall be 'S'. All plied yarn shall be made from single yarn of the same count that is approximately 5·56 ktex.

2.3 Skein — Each skein should be continuous throughout its length and should not contain any loose ends.

3. REQUIREMENTS

3.1 Spun hemp yarn, untarred or tarred shall comply with the requirements specified in Table 1.

3.2 Rot Proofing Treatment — If required by the buyer, spun hemp yarn shall be rot-proofed by the application of a suitable rot-proofing agent in appropriate quantity as agreed to between the buyer and the seller. In case zinc or copper napthanate is used, the zinc content shall be within 0·8 to 1·2 percent and copper content shall be within 0·4 to 0·8 percent respectively and the estimation of Zn and Cu shall be done in accordance with IS : 3522 (Part 1)-1966*.

4. PACKING

4.1 Unless otherwise agreed to between the buyer and the seller, the yarn shall be made into 1·8 m or 2·3 m girth skeins each weighing approximately 500 g. Suitable number of such skeins shall be packed into a bundle weighing 25 kg.

5. MARKING

5.1 Each bundle of skeins shall be marked with the following:

a) Name of the material;

b) Manufacturer's name or trade-mark, if any;

c) Net mass of the bundle; and

d) Year of manufacture.

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*Method for estimation of common preservatives used in textile industry, Part 1

TABLE 1 REQUIREMENTS OF SPUN HEMP YARN

(*Clause* 3.1)

VARIETY No. (OR No. OF YARNS PER PLY)	LINEAR DENSITY (APPROX) kTEX		TURNS PER METRE OF PLIED YARN, *Min*	RUNNAGE (m/25 kg), *Min*		BREAKING LOAD, N *Min* (60 cm TEST LENGTH)		TAR CONTENT FOR TARRED YARN	ASH CONTENT	WATER SOLUBLE MATTER CONTENT (OF EXTRACTED YARN)
	Un-tarred	Tarred		Un-tarred	Tarred	Un-tarred	Tarred			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1.	5·6	7·5	—	4 430	3 323	490	400	25 percent, *Min* and 33 percent, *Max*	4 percent, *Max*	3 percent, *Max*
2.	11·8	15·7	59	2 123	1 588	805	645			
3.	18·1	24·0	46	1 385	1 043	1 205	960			
4.	24·2	32·3	39	1 034	775	1 605	1 295			
5.	30·1	40·0	36	831	628	2 010	1 605			
METHODS OF TEST	—	—	IS : 832-1985*	A-2		IS : 1670-1970†		A-3	IS : 199-1973‡	IS : 3456-1966§

NOTE — 1 N = 0·102 kgf approximately.

*Method for determination of twist in yarn (*first revision*).

†Method for determination of breaking load, elongation at break and tenacity of yarns (*first revision*).

‡Method for determination of moisture, total size or finish, ash and fatty matter in grey and finished cotton textile materials (*second revision*).

§Method for determination of water soluble matter of textile materials.

5.1.1 The bundles may also be marked with the Standard Mark.

NOTE — The use of the Standard Mark is governed by the provisions of the Bureau of Indian Standards Act 1986 and the Rules and Regulations made thereunder. The Standard Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by BIS and operated by the producer. Standard Marked products are also continuously checked by BIS for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the Standard Mark may be granted to manufacturers or producers, may be obtained from the Bureau of Indian Standards.

6. SAMPLING AND CRITERIA FOR CONFORMITY

6.1 Lot — The quantity of bundles of hemp yarn of the same variety delivered to one buyer against one despatch note shall constitute a lot.

6.2 The conformity of a lot to the requirements of this standard shall be determined on the basis of the tests carried out on the samples selected from the lot.

6.3 Unless otherwise agreed to between the buyer and the seller, the number of bundles to be selected from a lot shall be in accordance with Table 2.

TABLE 2 NUMBER OF BUNDLES TO BE SELECTED FROM A LOT

NUMBER OF BUNDLES IN THE LOT (1)	SAMPLE SIZE OF BUNDLES (2)
Up to 15	2
16 ,, 25	3
26 ,, 50	5
51 and above	8

6.3.1 One skein shall be drawn from each bundle selected as in **6.3**.

6.4 Number of Tests

6.4.1 The runnage (m/25 kg) of each bundle selected shall be determined. Breaking load and turns per metre tests shall be determined on 20 test specimens prepared from the skeins selected as in **6.3.1** at random. As far as possible equal number of test specimens shall be prepared from each skein selected.

6.4.2 For determining tar content, ash content and water soluble matter content, any two skeins shall be drawn out of the skeins selected in **6.3.1** and one sample for each requirement shall be tested from each of the skeins drawn for testing.

6.5 Criteria for Conformity

6.5.1 The lot shall be considered conforming to the requirements of this standard if the following conditions are satisfied:

a) From the test results for turns per metre of plied yarn, runnage and breaking load, the average $\bar{X}$ and the range R is determined, and the value of the expression $\bar{X} - 0{\cdot}4\ R$ is greater than or equal to the relevant specified requirement.

b) From the test results for ash content and water soluble matter content, the average $\bar{X}$ and the range R is determined, and the value of the expression $\bar{X} + 0{\cdot}4\ R$ is less than or equal to the relevant specified requirement.

c) All the individual test results obtained on tar content shall remain within the specified limits.

NOTE — $\bar{X}$ = Average value obtained by dividing the sum of the observed values by the number of test results.

R = Range, that is difference between the maximum and minimum in a set of observed values.

APPENDIX A

(*Table* 1)

METHODS OF TEST

A-1. CONDITIONING OF TEST SPECIMENS AND ATMOSPHERIC CONDITIONS FOR TESTING

A-1.1 Conditioning of Test Specimens — Prior to test, the test specimens shall be conditioned to moisture equilibrium in a standard atmosphere at 65 ± 2 percent relative humidity and 27 ± 2°C temperature (*see also* IS : 6359-1971*), unless otherwise provided for in an agreement between the buyer and the seller.

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*Method for conditioning of textiles.

A-1.1.1 When the test specimens have been left in the standard atmosphere for 48 hours in such a way as to expose, as far as possible, all portions of the specimens to the atmosphere, they shall be deemed to have reached moisture equilibrium.

A-1.2 All tests shall be carried out in the standard atmospheric conditions (*see* **A-1.1**), unless otherwise provided for in an agreement between the buyer and the seller.

A-2. RUNNAGE (LENGTH IN m/kg OR 25 kg)

A-2.1 Take off from the skein a test specimen of 10 metres length measured under a tension of 2 percent of the specified breaking load. Condition the specimen to moisture equilibrium (*see* **A-1.1**) and determine the mass. On the basis of the result obtained, calculate the length in m/kg or 25 kg of the yarn.

A-3. TAR CONTENT

A-3.1 Cut out from each skein a test specimen weighing about 10 g. Condition the test specimen to moisture equilibrium (*see* **A-1.1**) and determine its mass to the nearest 25 mg. Extract the specimen in a Soxhlet apparatus with benzene as the solvent for about an hour and a half with a minimum of six syphonings. Evaporate the solvent from the extract until the odour of the solvent disappears. Dry the residue at 100 to 105°C for one hour and then condition it to moisture equilibrium. The difference in mass, expressed as a percentage of the mass of the unextracted specimen, shall be taken as the tar content.

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